

INTERNATIONAL COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

REES, Alex, E.
Urquhart-Dykes & Lord
30 Welbeck Street
London W1M 7PG
ROYAUME-UNI

Date of mailing (day/month/year) 06 October 2000 (06.10.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference AER/P24567 WO	
International application No. PCT/GB99/02125	International filing date (day/month/year) 02 July 1999 (02.07.99)

1. The following indications appeared on record concerning:

☒ the applicant ☐ the inventor ☐ the agent ☐ the common representative

Name and Address	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person ☐ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address AMINO HOLDINGS LIMITED Times House Fen End Willingham Cambridge GB4 5LH United Kingdom	State of Nationality GB	State of Residence GB
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

3. Further observations, if necessary:

New applicant for all designated States except the United States of America.

4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Sean Taylor
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PCT COOPERATION TREATY

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NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

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To:

REES, Alex, E.
Urquhart-Dykes & Lord
30 Welbeck Street
London W1M 7PG
ROYAUME-UNI

Date of mailing (day/month/year) 06 October 2000 (06.10.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference AER/P24567 WO	
International application No. PCT/GB99/02125	International filing date (day/month/year) 02 July 1999 (02.07.99)

1. The following indications appeared on record concerning:

☒ the applicant
 ☒ the inventor
 ☐ the agent
 ☐ the common representative

Name and Address GILBERT, Martyn 41 Saint Michaels Longstanton Cambridge CB4 5BZ United Kingdom	State of Nationality GB	State of Residence GB
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

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Name and Address GILBERT, Martyn 41 Saint Michaels Longstanton Cambridge CB4 5BZ United Kingdom	State of Nationality GB	State of Residence GB
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

3. Further observations, if necessary:
Applicant/inventor for US only.

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The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Sean Taylor
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

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NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 24 February 2000 (24.02.00)	
International application No. PCT/GB99/02125	Applicant's or agent's file reference AER/P24567 WO
International filing date (day/month/year) 02 July 1999 (02.07.99)	Priority date (day/month/year) 02 July 1998 (02.07.98)
Applicant GILBERT, Martyn	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

19 January 2000 (19.01.00)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Olivia RANAIVOJAONA Telephone No.: (41-22) 338.83.38
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PCT

From the INTERNATIONAL BUREAU

**NOTIFICATION OF THE RECORDING
OF A CHANGE**

(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

REES, Alex, E.
Urquhart-Dykes & Lord
30 Welbeck Street
London W1M 7PG
ROYAUME-UNI

Date of mailing (day/month/year) 08 June 2000 (08.06.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference AER/P24567 WO	
International application No. PCT/GB99/02125	International filing date (day/month/year) 02 July 1999 (02.07.99)

1. The following indications appeared on record concerning:	
<input type="checkbox"/> the applicant	<input type="checkbox"/> the inventor <input checked="" type="checkbox"/> the agent <input type="checkbox"/> the common representative
Name and Address REES, Alex, E. Urquhart-Dykes & Lord 91 Wimpole Street London W1M 8AH United Kingdom	State of Nationality
	State of Residence
	Telephone No. 0207 629 1771
	Facsimile No. 0207 491 1216
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:	
<input type="checkbox"/> the person <input type="checkbox"/> the name <input checked="" type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence	
Name and Address REES, Alex, E. Urquhart-Dykes & Lord 30 Welbeck Street London W1M 7PG United Kingdom	State of Nationality
	State of Residence
	Telephone No. 44 20 7487 1550
	Facsimile No. 44 20 7487 1599
3. Further observations, if necessary:	
4. A copy of this notification has been sent to:	
<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Dominique DELMAS
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Rule 71.1)

To:

REES, Alex E.
URQUHART-DYKES & LORD
30 Welbeck Street
London W1M 7PG
GRANDE BRETAGNE

URQUHART - DYKES

11 OCT 2000

& LORD

Date of mailing
(day/month/year) 05.10.2000

Applicant's or agent's file reference
AER/P24567 WO

IMPORTANT NOTIFICATION

International application No.
PCT/GB99/02125

International filing date (day/month/year)
02/07/1999

Priority date (day/month/year)
02/07/1998

Applicant
GILBERT, Martyn

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer

Ahrens, R

Tel. +49 89 2399-8136



PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference AER/P24567 WO		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) FOR FURTHER ACTION	
International application No. PCT/GB99/02125	International filing date (day/month/year) 02/07/1999	Priority date (day/month/year) 02/07/1998	
International Patent Classification (IPC) or national classification and IPC H04L12/00			
Applicant GILBERT, Martyn			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 11 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 19/01/2000	Date of completion of this report 05.10.2000
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Palacián Lisa, M Telephone No. +49 89 2399 8265 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/02125

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-35 as originally filed

Claims, No.:

1-36 as originally filed

Drawings, sheets:

1/10-10/10 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☒ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/02125

2. ☐ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
- ☒ not complied with for the following reasons:

see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:
- ☒ all parts.
- ☐ the parts relating to claims Nos. .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-36
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1,2,17-19, 22-32
	No:	Claims	3-16,20-21,33-36
Industrial applicability (IA)	Yes:	Claims	1-36
	No:	Claims	

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/02125

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Reference is made to the following documents:

- D1: SCIRE G ET AL: 'INTEGRATED DOMESTIC SYSTEM AN APPLIANCE MANUFACTURER'S APPROACH TO INNOVATION IN THE HOUSEHOLD' V.L.S.I. IN THE LABORATORY THE OFFICE THE FACTORY THE HOME, SAN FRANCISCO, FEBRUARY 23-26 1981 DIGEST OF PAPERS FROM COMPCON. SPRING, no. CONF. 22, 23 February 1981 (1981-02-23), pages 86-89, INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
- D2: EP-A-0 537 408

The document D2 was not cited in the international search report. A copy of the document was appended to the first written opinion.

Re Item IV

Lack of unity of invention

1. Independent claim 1 is based on the concept of providing a reliable connection of client devices to a network minimizing the bandwidth requirements and the number of connexions to the network. This is achieved by connecting the client devices in a hierarchical structure in which the client at the top of the structure provides a gateway to the server. The sum of the bandwidths of the communication links from each client device in a downstream direction is less than the bandwidth of the communications links in the upstream direction.
2. Independent claim 3 is based on the concept of switching messages between two communication links and a local element allowing access to the information only to the involved parties. This is achieved by a switch comprising two receivers and two transmitters to transfer messages between two different communication links and a local element. If the local element is the intended destination, the switch passes the message to the local element, otherwise it retransmits the message to the second link if it was received from the first link and it retransmits it to the first link if it was received from the second link.

3. Independent claims 26 and 31 are based on the concept of synchronizing a plurality of switches generating automatically a clock signal to enable communication with a new device when it is connected. This is achieved by receiving and sending clock transitions in two communications links, if a clock transition is received along a first communication link, a clock transition of the same polarity is transmitted to the first link and if it is received along the second communication link, a clock transition having the opposite polarity is sent back through the second link.
4. Independent claim 33 is based on providing security in a communication system. This is achieved by independently encrypting signals transmitted between devices along each communication link.
5. Thus, the above four groups of independent claims comprise different features and are based on different underlying concepts.

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Claim 1 relates to an electronic system architecture comprising a plurality of client devices connected in a hierarchical structure. The client devices form nodes in the structure interconnected by communications links in which one client device at the top of the hierarchical structure provides a gateway to a server. Each other client device is connected to a single client device through a single communications link in an upstream direction and to a number, which may be zero, of client devices through the same number of communications links in a downstream direction. Any client device able to make a hardware access request to a client device further in the downstream direction supports exception handling of the request.

Such an electronic system architecture is known from D1.

- 1.1 The problem to be solved is to avoid, at a low cost, congestion in the client devices in the upstream link due to traffic sent by the client devices in the downstream link.

1.2 The problem is solved by the client devices in the downstream direction having lower bandwidth requirements than any client devices upstream of them and the sum of the bandwidths of the communications links from each client device in a downstream direction being less than the bandwidth of the communications links in the upstream direction.

1.3 Neither the problem nor the solution is disclosed in the prior art documents. D1, which is considered the closest prior art, discloses a hierarchical network for the control of a house where a central unit provides all the functions necessary to control the dialogue with the external world and the user and it also monitors the correct functioning of different modules.

2. Claim 3 does not meet the requirement of inventive step, Article 33(3) PCT.

2.1 Document D2 discloses a switch suitable for use in an electronic system to connect a local element to first and second bi-directional communication links (see, e.g. page 3, lines 49 to 57; Figure 1; page 8, lines 15-18; Figure 5). The switch comprises first and second receiving/transmitting means able to receive/transmit messages along the first and second communication links respectively and transfer means to send and receive data from the local element (see, e.g. page 4, lines 24 to 28; page 8, lines 15 to 25; Figure 5). The messages include data identifying their intended destination (see, e.g. page 4, lines 3 to 11). The switch further comprises a message destination identification means able to identify received messages having the local element as their intended destination and to pass messages so identified to the local element whereas other messages are forwarded to the corresponding communication link (see, e.g. page 4, lines 19 to 23; page 8, lines 19-25).

The local element mentioned in the claim corresponds to one of the LAN segments connected to the bridge, for example the LAN segment LS-A shown in figure 5. The first and second bi-directional communication links correspond to the links connecting the bridge to the other two LAN segments, LS-B and LS-C. The bridge is able to identify the messages having the local element (LS-A) as intended destination and passing messages to it. Therefore, the feature of the local element is disclosed in D2.

2.2 Claim 3 differs from D2 in that the switch re-transmits messages not having the local

element as their intended destination without passing them to the local element.

- 2.3 D2 discloses the retransmission of messages to the corresponding destination communication link. In the method for forwarding frames (see page 5, lines 12-16), the feature of forwarding the frame only to the LAN segment indicated by a routing table according to the destination address is disclosed. In case the configuration with only two communication links (plus the local element) is chosen, it follows in a straightforward manner to include the feature of sending the messages received from the first link to the second link and vice-versa without passing them to the local element in case the local element is not the intended destination. Passing all messages to the local element (LS-A) is not expedient as this could require extra processing. Therefore, the solution adopted is the obvious design possibility.
3. Claim 26 relates to a device having at least two communications sections suitable for connection to similar devices along different bi-directional communications links. Such a device is known, for example, from D2.
- 3.1 The problem solved by the invention is to synchronize a plurality of devices generating automatically a clock signal to enable communication with a new device when it is connected.
- 3.2 The problem is solved by providing a first communications section arranged to respond to reception of a clock transition along a first communications link by transmitting a clock transition having the same polarity back along said first communications link and a second communications section arranged to respond to reception of a clock transition along a second communications link by transmitting a clock transition having the opposite polarity back along said second communications link.
- 3.3 Neither of the prior art documents provides an indication to transmit back a clock transition with the same or the opposite polarity as the received one depending on the link in which the clock transition was received.
- 3.4 SCIRE G ET AL: 'INTEGRATED DOMESTIC SYSTEM AN APPLIANCE MANUFACTURER'S APPROACH TO INNOVATION IN THE HOUSEHOLD' V.L.S.I.

IN THE LABORATORY THE OFFICE THE FACTORY THE HOME, SAN FRANCISCO, FEBRUARY 23-26 1981 DIGEST OF PAPERS FROM COMPCON. SPRING, no. CONF. 22, 23 February 1981, pages 86-89, INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS discloses a hierarchical network for the control of a house. CHILD J: 'INTELLIGENT HOME TECHNOLOGY LOOKS FOR LEVERAGE FROM RELATED MARKETS' COMPUTER DESIGN, vol. 36, no. 12, 1 December 1997, pages 85-87 describes a chip suitable for use in home network applications and software tools to control it. MARGOLIN B: 'SMARTER STUFF' BYTE, vol. 22, no. 6, 1 June 1997, page 85, 87, 89, 91/92 relates to embedded systems and their development. Neither of these documents deals with the problem of synchronizing different devices.

- 3.5 Besides claim 26, the application also comprises the independent claim 31. The features of claim 31 correspond to the ones in claim 26. Therefore, the requirement of inventive step (Article 33(3) PCT) is met.
4. Claim 33 does not meet the requirement of inventive step, Article 33(3) PCT.
- 4.1 Document D1 discloses an electronic communication system comprising at least three devices connected by at least two bi-directional communication links (see, e.g. page 86, section 'Integrated Domestic System'; Figure 1).
- 4.2 Claim 33 differs from D1 in that the signals between two devices along each communication link are independently encrypted.
- 4.3 Encryption of signals is a common measure for protecting data transmission from undesired eavesdropping. Therefore, it is obvious to add this feature to the system disclosed in D1 without involving any inventive step.

In case that it would be argued that the feature of independently encrypting the two communication links solves the problem of providing greater protection of sensitive data, an inventive step would also not be acknowledged as this feature is merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem posed.

5. The dependent claims 4-16, 20-21 and 34-36 do not contain any additional feature which, in combination with the corresponding independent claims 3 and 33, meet the requirement of inventive step. All these features are either known from the cited prior art (passing of messages in full or only preset parts; retransmission of messages with or without amendments; use of processors; use of discrete devices) or are common measures (use of acknowledgment messages; separate blocks comprising transmitting, receiving and message controlling means within a switch; use of encryption/decryption; use of security processors; use of smart cards to encrypt/decrypt; use of exclusive OR masks; independent encryption of signals in opposite directions; encryption/decryption done by the sending/receiving device).
6. Claims 2, 27-30 and 32 are dependent on claims 1, 26 and 31, respectively, and as such also meet the requirements of Article 33 PCT with respect to novelty and inventive step.
7. The subject-matters of dependent claims 17-19 and 22-25 are novel and inventive because they include the features of receiving a clock transition along a first communications link and transmitting a clock transition having the same polarity back along said first communications link and responding to reception of a clock transition along a second communications link by transmitting a clock transition having the opposite polarity back along said second communications link. These features meet the requirement of Article 33 PCT (see point 3 above).

Re Item VII

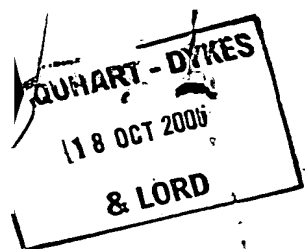
Certain defects in the international application

1. The independent claims are not in the two-part form as required by Rule 6.3(b) PCT, whereby the features already disclosed in document D1 or D2 (depending on the respective alleged invention) should have been placed in the preamble.
2. Reference signs in parentheses should have been inserted in the claims to increase their intelligibility (Rule 6.2(b) PCT). This applies to both the preamble and characterising portion.

3. To meet the requirements of Rule 5.1(a)(ii) PCT, the documents D1 and D2 should have been identified in the description and their relevant contents should have been briefly indicated.

Re Item VIII**Certain observations on the international application**

1. Claims 26 and 31 do not meet the requirement of conciseness, Article 6 PCT. Therefore, a single independent apparatus claim should have been filed.
2. The term "oscillating loop" in claims 29 and 31 has not been defined (Article 6 PCT). Such a term does not have a standard meaning.
3. The term "input and output clock states" in claim 30 lacks antecedent definition (when referring to claim 26 through claim 29), rendering the scope of the claim unclear. The same applies to the term "the loop". It is also not clear in claim 30 which are the communication sections first linked.



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30 Welbeck Street
London W1M 7PG
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Date of mailing (day/month/year) 06 October 2000 (06.10.00)	IMPORTANT NOTIFICATION
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3. Further observations, if necessary:

Applicant/inventor for US only.

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☒ the International Preliminary Examining Authority ☐ other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Sean Taylor
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

URQUHART - DYKES

118 OCT 2000

& LORD

NOTIFICATION OF THE RECORDING
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From the INTERNATIONAL BUREAU

To:

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30 Welbeck Street
London W1M 7PG
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International application No. PCT/GB99/02125	International filing date (day/month/year) 02 July 1999 (02.07.99)

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<input checked="" type="checkbox"/> the person	<input type="checkbox"/> the name	<input type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence
Name and Address AMINO HOLDINGS LIMITED Times House Fen End Willingham Cambridge GB4 5LH United Kingdom	State of Nationality GB	State of Residence GB
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
3. Further observations, if necessary: New applicant for all designated States except the United States of America.		
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<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:	

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Sean Taylor
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
13 January 2000 (13.01.2000)

PCT

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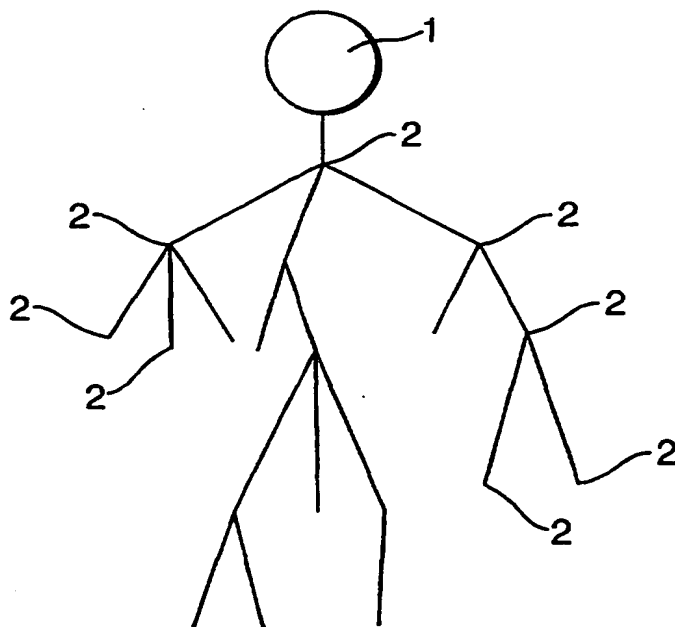
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(54) Title: **ELECTRONIC SYSTEM ARCHITECTURE**



(57) Abstract: An electronic system architecture comprises a plurality of client devices connected in a hierarchical structure in which the client devices form nodes in the structure interconnected by communications links. One client device at the top of the hierarchical structure provides a gateway to a server and each other client device is connected to a single client device through a single communications link in an upstream direction and each client device is connected to a number, which may be zero, of client devices through the same number of communications links in a downstream direction. The downstream client devices have lower bandwidth requirements than any client devices upstream of them and the sum of the bandwidths of the communications links from each client device in a downstream direction is less than the bandwidth of the communications links in the upstream direction. Client devices are able to make a hardware access request to a client device further in the downstream direction support exception handling of the request.

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